

# O&M

operations maintenance



A Product of the FEMP  
O&M Center of Excellence

## Best Practices

A Guide to Achieving *Operational Efficiency*

**Release 2.0**

- Technology
- Energy and Water
- Management
- Environment
- Training
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*Operational  
Efficiency*

*July 2004*



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**Release 2.0**

## **Operations & Maintenance**

### **Best Practices**

#### **A Guide to Achieving *Operational Efficiency***

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## Preface

This Operations and Maintenance (O&M) Best Practices Guide was developed under the direction of the U.S. Department of Energy's Federal Energy Management Program (FEMP). The mission of FEMP is to reduce the cost and environmental impact of the federal government by advancing energy efficiency and water conservation, promoting the use of distributed and renewable energy, and improving utility management decisions at federal sites. Each of these activities is directly related to achieving requirements set forth in the *Energy Policy Act of 1992* and the goals that have been established in Executive Order 13123 (June 1999), but also those that are inherent in sound management of federal financial and personnel resources.

Release 2.0 of this guide highlights O&M programs targeting energy efficiency that are estimated to save 5% to 20% on energy bills without a significant capital investment. Depending on the federal site, these savings can represent thousands to hundreds-of-thousands dollars each year, and many can be achieved with minimal cash outlays. In addition to energy/resource savings, a well-run O&M program will:

- Increase the safety of all staff, as properly maintained equipment is safer equipment.
- Ensure the comfort, health and safety of building occupants through properly functioning equipment providing a healthy indoor environment.
- Confirm the design life expectancy of equipment is achieved.
- Facilitate the compliance with federal legislation such as the *Clean Air Act* and the *Clean Water Act*.

The focus of this guide is to provide the Federal O&M/Energy manager and practitioner with information and actions aimed at achieving these savings and benefits.

The guide consists of eleven chapters. The first chapter is an introduction and an overview. Chapter 2 provides the rationale for "Why O&M?" Chapter 3 discusses O&M management issues and their importance. Chapter 4 examines Computerized Maintenance Management Systems (CMMS) and their role in an effective O&M program. Chapter 5 looks at the different types of maintenance programs and definitions. Chapter 6 focuses on maintenance technologies, particularly the most accepted predictive technologies. Chapter 7 describes the building commissioning process and how it contributes to effective O&M. Chapter 8 covers the topic of metering and its applications for improved operations and efficiency. Chapter 9 explores O&M procedures for the predominant equipment found at most federal facilities. Chapter 10 describes some of the promising O&M technologies and tools on the horizon to increase O&M efficiency. Chapter 11 provides ten steps to initiating an *operational efficiency* program. Additional information is provided in the appendixes.

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